

DEPARTMENT OF TRANSPORTATION**DIVISION OF ENGINEERING SERVICES**

Office of Structural Materials

Quality Assurance and Source Inspection



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Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 1.28**WELDING INSPECTION REPORT****Resident Engineer:**Siegenthaler, Peter**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-022468**Date Inspected:** 05-Apr-2011**Project Name:** SAS Superstructure**OSM Arrival Time:** 700**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1530**Contractor:** American Bridge/Fluor Enterprises, a JV**Location:** Job Site**CWI Name:** Steve Jensen**CWI Present:** Yes No**Inspected CWI report:** Yes No N/A**Rod Oven in Use:** Yes No N/A**Electrode to specification:** Yes No N/A**Weld Procedures Followed:** Yes No N/A**Qualified Welders:** Yes No N/A**Verified Joint Fit-up:** Yes No N/A**Approved Drawings:** Yes No N/A**Approved WPS:** Yes No N/A**Delayed / Cancelled:** Yes No N/A**Bridge No:** 34-0006**Component:** Tower**Summary of Items Observed:**

This Quality Assurance (QA) Inspector, Craig Hager was on site at the job site between the times noted above. This QA Inspector was on site to randomly observe Quality Control (QC) personnel perform Non-Destructive Testing (NDT) and monitor American Bridge/Fluor (ABF) welding operations. This Quality Assurance (QA) Inspector, Craig Hager observed the following.

Tower Splice – 83 Meter elevation, South Tower leg: This QA Inspector randomly observed the status of the upper and lower Interior Corner Closure Splice Plates located at the B- C corner and C-D corner. During a random visual verification of the fit up work in process the following was observed:

B-C corner, lower plate: The plate was tack welded into position and the root opening/gap appeared to be approximately 1-2 mm. QC Inspector Steve Jensen informed this QA Inspector that ABF welding personnel were intending to increase the size of the current, 6 mm leg by 100 mm long tack welds. Welding at this location was attempted multiple times during the morning but did not proceed. This QA Inspector was informed by ABF welding personnel Todd Jackson and QC Inspector Steve Jensen the oxygen content and lower explosive level alarms went off on the air monitors in the space. It was later discovered that one of the fans was blowing the wrong way and that after this was corrected the gas torch was able to be used to provide a local preheat without setting off the air monitors. This QA Inspector observed ABF welding personnel Salvador Sandoval (#2202) performing Flux Cored Arc Welding (FCAW) after the lunch break to increase the size of the existing tack welds on the plate. QC Inspector Steve Jensen was observed monitoring the work at this location. The work observed by this QA Inspector appeared to comply with Welding Procedure Specification (WPS) ABF-WPS-D15-F2200-3.

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B-C corner, upper plate: The plate was tack welded into position and the root opening/gap above the bolted in corner section was measured and marked by QC Inspector Steve Jensen. This QA Inspector observed markings ranging from 5mm to 8.5 mm. This QA Inspector performed a random visual verification of the gap and observed the marking appeared to consistently be 1 mm less than what was marked adjacent on the plate. This QA Inspector asked QC Inspector Steve Jensen when he had taken the measurements and was informed it was done late yesterday afternoon. This QA Inspector performed the verification early the next morning and informed QC Inspector Steve Jensen of the difference observed between the measurements (1 mm). QC Inspector Steve Jensen re-measured the gaps and concurred the readings were all approximately 1 mm less. This QA Inspector and QC Inspector Steve Jensen discussed the difference regarding the time of day and temperature differences of when the readings were taken and concluded the 1 mm difference could be due to the expansion/contraction of the steel due to temperature changes. This QA Inspector observed the tack welds on the left side of the plate (2) had been marked for removal due to cracking and the tack welds on the right side (2) marked for additional grinding due visual weld defects.

D-C corner, lower plate: The plate was tack welded into position and the root opening/gap appeared to be approximately 1-2 mm. QC Inspector Steve Jensen informed this QA Inspector that ABF welding personnel were intending to increase the size of the current, 6 mm leg by 100 mm long tack welds.

D-C corner, upper plate: The plate was tack welded into position and the root opening/gap appeared to be approximately 1-2 mm. QC Inspector Steve Jensen informed this QA Inspector that ABF welding personnel were intending to increase the size of the current, 6 mm leg by 100 mm long tack welds. Welding at this location was not observed this date.

Welding was not observed in the West, East or North Tower legs this date.

Tower Base – 3 to 13 Meter elevation; This QA Inspector randomly observed ABF welding personnel Rick Clayborn (#2773) using the Flux Cored Arc Welding (FCAW) process for welding the temporary attachments at the various Electro Slag Welding (ESW) joints. This QA Inspector randomly observed ABF welding personnel Kenneth Chappell using the Shielded Metal Arc Welding (SMAW) process to fit and tack weld the various plates used as temporary attachments for the ESW process. This QA Inspector randomly observed QC Inspector Pat Swain monitoring the work at each location welding was being performed.

Summary of Conversations:

This QA Inspector had general conversations with American Bridge/Fluor (ABF) and Caltrans personnel during this shift. Except as described above and noted below there were no notable conversations.

This QA Inspector was informed by Caltrans Construction Engineer Doug Wright that Caltrans Construction Engineer Mark Woods had verbally approved a modification to the contract requirements regarding the preheating and post heating of the welds for the Interior Corner Closure Splice Plates as follows: The use of local preheat (gas torch) is acceptable for preheating for tack welding, the use of local preheat is acceptable for the start of welding in order for enough weld to be deposited to allow a transfer of heat from the induction heater placed on the outside surface of the splice plate. It was implied that this stage should be monitored to determine how much

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welding is required prior to the need not to use local preheating. The preheat is allowed to be interrupted providing the heating is maintained for the required 3 hours after welding has stopped. Therefore a weld can be started multiple times provided post heating is provided each time welding is stopped.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Nina Choy (510) 385-5910, who represents the Office of Structural Materials for your project.

Inspected By:	Hager,Craig	Quality Assurance Inspector
Reviewed By:	Levell,Bill	QA Reviewer
